

PROP. II. Theor. II.

The Light of the Sun consists of Rays differently Refrangible.

The Proof by Experiments.

Exper. 3. **I**N a very dark Chamber at a round hole about one third part of an Inch broad made in the Shut of a Window I placed a Glass Prism, whereby the beam of the Sun's Light which came in at that hole might be refracted upwards toward the opposite Wall of the Chamber, and there form a coloured Image of the Sun. The Axis of the Prism (that is the Line passing through the middle of the Prism from one end of it to the other end Parallel to the edge of the Refracting Angle) was in this and the following Experiments perpendicular to the incident Rays. About this Axis I turned the Prism slowly, and saw the refracted Light on the Wall or coloured Image of the Sun first to descend and then to ascend. Between the Descent and Ascent when the Image seemed Stationary, I stopt the Prism, and fixt it in that Posture, that it should be moved no more. For in that posture the Refractions of the Light at the two sides of the Refracting Angle, that is at the entrance of the Rays into the Prism and at their going out of it, were equal to one another. So also in other Experiments as often as I would have the Refractions on both sides the Prism to be equal to one another, I noted the place where the Image of the Sun formed by the refracted Light stood still between its two contrary Motions, in the common Period of its progress and egress; and when the Image fell upon that place, I made fast the Prism. And in this posture, as

the most convenient, it is to be understood that all the Prisms are placed in the following Experiments, unless where some other posture is described. The Prism therefore being placed in this posture, I let the refracted Light fall perpendicularly upon a Sheet of white Paper at the opposite Wall of the Chamber, and observed the Figure and Dimensions of the Solar Image formed on the Paper by that Light. This Image was Oblong and not Oval, but terminated with two Rectilinear and Parallel Sides, and two Semi-circular Ends. On its Sides it was bounded pretty distinctly, but on its Ends very confusedly and indistinctly, the Light there decaying and vanishing by degrees. The breadth of this Image answered to the Sun's Diameter, and was about two Inches and the eighth part of an Inch, including the Penumbra. For the Image was eighteen Feet and an half distant from the Prism, and at this distance that breadth if diminished by the Diameter of the hole in the Window-shut, that is by a quarter of an Inch, subtended an Angle at the Prism of about half a Degree, which is the Sun's apparent Diameter. But the length of the Image was about ten Inches and a quarter, and the length of the Rectilinear Sides about eight Inches; And the refracting Angle of the Prism whereby so great a length was made, was 64 degr. With a less Angle the length of the Image was less, the breadth remaining the same. If the Prism was turned about its Axis that way which made the Rays emerge more obliquely out of the second refracting Surface of the Prism, the Image soon became an Inch or two longer, or more; and if the Prism was turned about the contrary way, so as to make the Rays fall more obliquely on the first refracting Surface, the Image soon became an Inch or two shorter. And therefore in trying this Experiment, I was as curious as I could be in placing the Prism by the above-mentioned Rule exactly in

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